1. (Amended) An active or passive pixel structure comprising:

a semiconductor substrate with dopants of a first conductivity type at a first concentration density, and with an insulating layer at its surface;

a collection region with dopants of a second conductivity type which is opposite the first conductivity type at a second concentration density, formed in the surface region of the semiconductor substrate;

a dual-purpose electrode formed on the insulating layer, extending over both the surface of at least part of the collection region and over at least part of the substrate, the dual-purpose electrode being intended to be driven by a first voltage for collecting in the collection region charges generated by electromagnetic radiation and by a second voltage for transferring the charges from the collection region into a detection region.

2. (Amended) The pixel structure recited in claim 1 wherein the substrate further comprises a barrier region of the first conductivity type with a concentration density of dopants being higher than the concentration density of dopants in the substrate.

3. (Amended) The pixel structure recited in claim 2 wherein said barrier region is extending at least partly under the dual-purpose electrode.

4. (Amended) The pixel structure recited in claim 1 further comprising a detection region with dopants of the second conductivity type at a third concentration density, formed in the surface region of the semiconductor substrate and not bordering the collection region and being connected to read-out electronics.

5. (Amended) The pixel structure recited in claim 1, wherein the collection region forms a junction with the semiconductor substrate.

6. (Amended) The pixel structure recited in claim 5, wherein the junction formed is a photodiode.

7. (Amended) The pixel structure recited in claim 1, wherein the surface regions of the semiconductor substrate beyond the collection region are barrier regions which have dopants of the first conductivity type at a concentration density larger that the concentration

density of the semiconductor substrate and read-out electronics are formed within shielding regions.

8. (Amended) The pixel structure recited in claim 7, wherein at least part of the charge carriers that are generated in the semiconductor substrate underneath the shielding regions are collected by the collection region.

9. (Amended) The pixel structure recited in claim 1, wherein a pinning region with dopants of the first conductivity type at a fourth concentration density is within the surface region.

10. (Amended) The pixel structure recited in claim 9, wherein the pinning region is not covered by the dual-purpose electrode.

11. (Amended) The pixel structure recited in claim 10, wherein the pinning region is aligned with the dual-purpose electrode, and extends along the collection region.

Please cancel Claim 12 without prejudice.

REMARKS

The Office Action mailed on May 23, 2001 was based on Claims 1-12, wherein Claim 12 has been withdrawn from consideration. The Amendment amends Claims 1-11 and cancels Claim 12. Thus, after entry of this Amendment, Claims 1-11 are pending. In view of the amendments and the following comments, Applicant respectfully requests reconsideration and allowance of the pending claims as amended.

The specific changes to the specification and the amended claims are shown on a separate set of pages attached hereto and entitled **VERSION WITH MARKINGS TO SHOW CHANGES MADE**, which follows the signature page of this Amendment. On this set of pages, the insertions are double underlined while the ~~deletions are struck through~~.

Objections to the Specification: